RECEIVED
CENTRAL FAX CENTER
APR 1 9 2006

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/691273
Filing Date	October 18, 2000
First Named Inventor	ROBERT ANTHONY MARIN Et. Al.
Art Unit	1771
Examiner Name	LYNDA SALVATORE
Attorney Docket Number	TK3410USNA
Total Number of Pages in This Submission	18

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Return Receipt Postcard (MPEP 503)
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD. Number of CD(s) ______
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☑ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) (please identify below):

Remarks

FEE UNDER 37 CFR 41.20(b)(2) FOR FILING APPEAL BRIEF - $500.00 - PLEASE CHARGE SUCH FEE TO DEPOSIT ACCOUNT NO. 04-1928 (E. I. DU PONT DE NEMOURS AND COMPANY)

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	E. I. DU PONT DE NEMOURS AND COMPANY		
Signature	Thomas W Steinberg		
Printed name	THOMAS W. STEINBERG		
Date	4/19/06	Reg. No.	37,013

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	Frances G. Lestardo		
Typed or printed name	FRANCES G. LESTARDO	Date	April 19, 2006

RECEIVED
CENTRAL FAX CENTER

Rev. 10/93

APR 1 9 2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

ROBERT ANTHONY MARIN ET. AL. CASE NO.: TK3410 US NA

SERIAL NO.: 09/691,273 GROUP ART UNIT: 1771

FILED: OCTOBER 18, 2000 EXAMINER: LYNDA SALVATORE

FOR: FLASH-SPUN SHEET MATERIAL

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Final Rejection mailed September 19, 2005 as to the above-referenced application, a Notice of Appeal having been filed on March 7, 2006, Appellants submit the following Appeal Brief.

1. REAL PARTY IN INTEREST

The present application is assigned to E. I. du Pont de Nemours and Company, 1007 Market Street, Wilmington, Delaware 19898, said assignment being recorded at reel 011649, frame 0924.

2. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

3. STATUS OF CLAIMS

Claims 2-4, 7-18, and 21-30 stand finally rejected.

Claims 1, 5, 6, 19, and 20 have been canceled.

The final rejection of claims 2-4, 7-18, and 21-30 is appealed herein.

A copy of the claims is set forth in the Appendix hereto.

4. STATUS OF AMENDMENTS

All amendments have been entered.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

In one embodiment, the present invention is directed to a polyethylene plexifilamentary fiber strand produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C (page 12, lines 4-23) to form said plexifilamentary fiber strand having a surface area of less than 10 m^2/g (page 14, lines 13-16) and a crush value of at least 1 mm/g (page 16, lines 1-5).

A second embodiment of the claimed invention is directed to a nonwoven unitary fibrous sheet produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C (page 12, lines 4-23) to form substantially continuous polyethylene plexifilamentary fiber strands having surface areas of less than 10 m^2/g and crush values of at least 1 mm/g (page 16, lines 1-5), collecting said plexifilamentary fiber strands to form a sheet and bonding said sheet to form said nonwoven unitary fibrous sheet (original claim 19) comprised of substantially continuous polyethylene plexifilamentary fiber strands and having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 2 cfm/ft^2 (page 16, lines 6-8).

A third embodiment of the claimed invention is directed to a nonwoven sheet produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C (page 12, lines 4-23) to form substantially continuous polyethylene plexifilamentary fiber strands having surface areas of less than 10 m^2/g and crush values of at least 1 mm/g (page 16, lines 1-5), collecting said plexifilamentary fiber strands to form a sheet and bonding said sheet to form said nonwoven sheet comprised of substantially continuous polyethylene plexifilamentary fiber strands and having a hydrostatic head of at least 110 cm (original claim 6) and a Gurley Hill Porosity of less than 6 seconds (page 16, lines 16-18).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 2-4, 7-18, and 24-30 stand rejected under 35 U.S.C. §103(a) as obvious in view of either McGinty et al. (U.S. Patent No. 6,010,970) or alternatively over Harriss et al. (WO 98/39509) in view of Blades (U.S. Patent No. 3,081,519).

II. Claims 21-23 stand rejected under 35 U.S.C. §103(a) as obvious in view of either McGinty et al. (U.S. Patent No. 6,010,970) or alternatively over Harriss et al. (WO 98/39509) in view of Blades and further in view of Bisbis et al. (U.S. Patent No. 5,919,539).

7. ARGUMENT

Claims 2-4, 7-18, and 24-30 stand rejected under 35 U.S.C. §103(a) as obvious in view of either McGinty et al. (U.S. Patent No. 6,010,970) or alternatively over Harriss et al. (WO 98/39509) in view of Blades (U.S. Patent No. 3,081,519).

Initially, Appellants submit that McGinty et al. is unavailable as prior art under 35 U.S.C. §103(c), since it is co-assigned to the assignee of the present application (reel 009322/frame 0035), and published after the priority date of the present application. Appellants have repeatedly pointed out this deficiency to the Examiner, but such efforts have failed in removing McGinty et al. as a reference, with no explanation from the Examiner.

However, the portion of the McGinty et al. disclosure relied upon by the Examiner (Comparative Example 1, col. 12, lines 39-65; Office Action of May 2, 2005, pages 2-3) is identical to that of Harriss et al. (Comparative Example 1, page 17, line 23, bridging to page 18, line 7) and Appellants will address the deficiencies of Harriss et al. below. (McGinty et al. is a CIP of Harriss et al.).

Likewise, Appellants dispute the Examiner's statement in the Advisory Action issued February 9, 2006, that claims 29 and 30 do not contain a maximum surface area limitation. Claims 29 and 30 were amended to include a maximum surface area limitation of less than 10 m^2/g in Appellants' response of June 3, 2004.

The Prior Art

Harriss et al. disclose improved sheets of bonded plexifilamentary film-fibril strands spun from a polyolefin and 0.05-10 wt% of a pigment (Abstract), which have improved opacity and smoothness as compared to non-pigmented sheets, under various levels of bonding, as described by delamination strength (page 4, lines 19-31), in order to provide improved sheets for printing of bar codes (page 11, lines 1-27).

Comparative Example 1 of Harriss et al. (corresponding to Comparative Example 1 of McGinty et al., cited by the Examiner), discloses the spinning of plexifilamentary webs of high-density polyethylene (PE) from a mixed pentane/cyclopentane spin agent. The spinning fluid contained 18.7 wt% PE and the spinning temperature was 185°C (p. 17, lines 23-32). Harriss et al. fail to disclose or suggest spinning plexifilamentary webs of PE at the temperatures set forth in the present claims, i.e. from about 205°C to about 220°C (claims 28-30); and likewise fail to disclose anything regarding surface areas, crush values (present claims 28-30), Frazier permeability (claim 29), Gurley Hill porosity or hydrostatic head (claim 30) of their Comparative Example 1 plexifilamentary web.

Blades et al. disclose a new process for shaping fiber-forming polymers and the novel multi-fibrous strands produced thereby (col. 1, lines 10-12). Blades et al. characterize their multi-fibrous strands as "yarn-like" (col. 2, lines 23-25), and indicate that they make two classes of such plexifilamentary strands: (1) fibrillated strands which are very fibrous in nature and an open network of narrow ribbon-like elements or film-fibrils generally coextensively aligned with the longitudinal axis of the strand; and (2) partially condensed strands having the structure of the fibrillated strand and containing densified sections of film-fibril layers (col. 2, lines 57-64). In their general characterization of their film-fibril strands (col. 3, line 31, bridging to col. 5, line 33), Blades et al. disclose that their "plexifilamentary strands have a surface area greater than 2 m^2/g" (col. 5, lines 14-15). Blades et al. disclose a laundry list of suitable polymers, additives, solvents, and conditions, including temperatures and concentrations, under which their plexifilamentary strands can be spun (col. 7, line 63, bridging to col. 9, line 37). Blades et al. fail to disclose or suggest forming their plexifilamentary strands into a bonded nonwoven sheet (present claims 29 and 30); and likewise fail to disclose anything regarding surface areas, crush values (present

claims 28-30), Frazier permeability (claim 29), Gurley Hill porosity or hydrostatic head (claim 30).

The Rejections

I. Rejection under 35 U.S.C. §103(a) over Harriss et al. in view of Blades et al.

I.A. Claims 28 and 2-4 stand rejected under 35 U.S.C. §103(a) as obvious in view of Harriss et al. in view of Blades et al.

Claim 28 is directed to a unique polyethylene (PE) plexifilamentary fiber strand which has a surface area of less than 10 m^2/g and a crush value of at least 1 mm/g, made by a process of flash spinning a solution of between 12 and 24 wt% polyethylene in a spin agent consisting of a mixture of normal pentane and cyclopentane at a temperature from about 205-220°C. Dependent claims 2-4 are directed to more preferred surface areas and crush values of the strands of claim 28.

The Examiner cites Comparative Example 1 of Harriss et al. for the proposition that the general flash spinning parameters of claim 28 are known in the art (i.e. polymer, concentration, and mixed spin agent), but recognizes that Comparative Example 1 of Harriss et al. was conducted at a spinning temperature (185°C) well-below the claimed range of about 205-220°C.

To cure the deficiencies of Harriss/(McGinty) et al., the Examiner cites the exemplary data of Blades et al. (Example V at column 13, lines 15-60), wherein spinning of plexifilamentary strands from solutions of PE in a methylene chloride spin agent, at various temperatures from 190°C to 216°C is disclosed. The Examiner argues that the skilled artisan would have been motivated to modify the teachings of Harriss et al. as to spinning temperature in view of the Blades et al. disclosure of higher spinning temperatures to obtain plexifilamentary webs having "opacity, smoothness, softness, quietness, and strength". (Office Action of May 2, 2005, page 4).

Appellants respectfully submit that as to claims 2-4 and 28, Blades et al. is improperly combined with Harriss et al. Harriss et al. is directed to forming improved sheets of bonded plexifilamentary film-fibril strands spun from a polyolefin and 0.05-10 wt% of a pigment (Abstract), which have improved opacity and smoothness as

compared to non-pigmented sheets, under various levels of bonding, as described by delamination strength (page 4, lines 19-31), in order to provide improved sheets for printing of bar codes (page 11, lines 1-27). In contrast, the Example V materials of Blades et al. are disclosed as useful for "high quality woven or knitted fabrics" (col. 13, lines 57-59).

On a technical level, one of skill in the art would not have been motivated to modify Harriss et al., which discloses improved sheets for bar code printing, in the manner suggested by Example V of Blades et al., since the strands of Blades et al. are (1) not disclosed to be bonded into a nonwoven sheet, and (2) are disclosed to be soft, and thus unsuitable for a printing surface, such as desired in Harriss et al. which discloses a high degree of thermal bonding of the sheet to provide for a smooth, reflective sheet surface (page 11, lines 1-27). Technically, the references are improperly combined and therefore no *prima facie* case of obviousness can be said to have been established.

On a legal level, Appellants submit that the Examiner has selected only a single spinning parameter (temperature) from Blades et al. for combination with Harriss et al., to the exclusion of several other spinning parameters disclosed by Blades et al., including spin pressures and spin agents. In Example V, cited by the Examiner, Blades et al. disclose the use of methylene chloride as the spin agent. By suggesting the use of the spinning temperatures in Blades et al.'s Example V in Harriss et al.'s process, absent the substitution of the particular spin agent of Blades et al. (methylene chloride) for the spin agent of Harriss et al. (mixed pentanes), the Examiner fails to consider the Blades et al. reference as a whole.

> "[T]he test is whether the combined teachings of the prior art, taken as a whole" suggest the modifications to the skilled artisan. In re Napier, 55 F.3d 610, 34 USPQ 2d 1782 (Fed. Cir. 1995). Absent such a showing, the Examiner has impermissibly used the Applicant's teaching to hunt through the prior art for the claimed elements and combine them as claimed. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Further,

> It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a

> given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Wesslau, 147 USPQ 391, 393 (CCPA 1965).

Those skilled in the flash spinning art are well-aware of the inter-relationship between the numerous parameters of the process and the inability to completely predict what effects changes in even one of such parameters might have on the end product.

For example, Shin et al. (U.S. Patent No. 5,147,586, already of record herein) disclose numerous examples of flash spinning processes with variations in polymer, spin agent, polymer concentration, co-solvents, spin temperature, and spin pressure. At column 1, Shin et al. provide a recitation of the key learnings of Blades et al., which indicates that a large variety of factors must be considered in selecting a spin agent (col. 1, lines 31 et seq.), including the physical and chemical characteristics of such solvents under high temperatures and pressures; characteristics which are unlikely to be set forth in textbooks or reference manuals. Collectively, the experimental data of Shin et al. (cols. 12-18) reveals that the development process for flash spinning is highly empirical, as evidenced by the fact that the patentees ran numerous tests changing a single parameter at a time. Few, if any, trends in the end product characteristics are evident, even within data sets for a single spin agent, let alone between experiments conducted with different spin agents.

Similarly, Blades et al. investigate only four different spin agents: methylene chloride, Freon® 11, mixed Freon® 11/octene (Ex. XVIII), and mixed methylene chloride/butane (Ex. XIX). Notably, the spinning temperature ranges for methylene chloride are quite different from those for Freon® 11, and the reported physical characteristics of the end products vary widely. There is no evidence, reasonably derivable from Blades et al. that the spin temperatures used for methylene chloride solutions would even be suitable for mixed pentane spin agents, such as those in Harriss et al., let alone to provide the proposed end product benefits of fiber smoothness and softness disclosed in Blades et al.

At best, the Examiner's proposed modification of Harriss et al.'s spinning temperature range by the Blades et al. disclosure is an obvious to try standard of patentability.

Accordingly, Appellants submit that the Examiner has engaged in an impermissible hindsight reconstruction of the presently claimed invention by picking and choosing from Blades et al. only the information which supports the proposed rejection, and as such no *prima facie* case of obviousness can be said to have been established.

I.B. Claims 29, 7-18, and 24-27 stand rejected under 35 U.S.C. §103(a) as obvious in view of Harriss et al. in view of Blades et al.

Claim 29 is directed to a nonwoven unitary fibrous sheet formed from fibrous strands having surface areas of less than 10 m^2/g and crush values of at least 1 mm/g, which are collected into a sheet and bonded to form a sheet having a Frazier permeability, normalized to a basis weight of 1 oz/yd^2, of at least 2 cfm/ft^2, and made according to the described flash spinning process. Dependent claims 7-12 are directed to various hydrostatic head values of the sheets of claim 29, and claims 13-18 to more preferred Frazier permeability values of claim 29. Claims 24-27 are directed to various suitable products which can be made of the sheets of claim 29.

Appellants reiterate their comments *supra* in respect to the deficiencies of the base reference Harriss et al., and to its combination with Blades et al., as suggested by the Examiner. That is, the references are improperly combined, both technically and legally, and fail to present a *prima facie* case of obviousness as to claim 29, and claims dependent thereon. Withdrawal of the rejection is requested on this basis alone.

The Examiner does not differentiate between the motivation to combine the cited references in order to obtain the invention of claim 28, and that of claim 29, which contains the additional limitations of: (1) being a bonded sheet material and (2) having a Frazier (air) permeability of at least 2 cfm/ft^2. Accordingly, the deficiencies of the Examiner's proposed motivation to combine Harriss et al. and Blades et al. are still applicable to the rejection of claim 29 and those claims dependent thereon.

Further, neither Harriss et al. nor Blades et al. disclose or suggest a nonwoven sheet having a Frazier Permeability of at least 2 cfm/ft^2. "[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations." <u>In re</u>

Vaeck, *Id.* The Examiner finds that as to the recited physical properties combinations of

> crush value, surface area, Frazier Permeability, hydrostatic head, and Gurley Hill Porosity values it is reasonable to presume that said property will be met by the plexifilamentary film-fibrils of the invention of McGinty et al. [Harriss et al.], in view of Blades et al. Support for said presumption is found in the use of like materials (i.e., polyethylene/normal pentane/cyclopentane) and the use of like processes (flash-spun plexifilamentary filaments at a temperature ranging from 190-216° C), which would result in the claimed property. (Office Action of May 2, 2005; page 3, last paragraph, repeating quotation from In re Fitzgerald, 205 USPQ 594 (CCPA 1980), raised in Office Action of March 12, 2004, page 11; emphasis added).

Notably, the temperature range cited by the Examiner (190-216°C) is derived from the individual tests disclosed by Blades et al. in Example V.

Appellants respectfully submit that it is not "reasonable" under Fitzgerald for the Examiner to presume that merely because "like materials...and like processes" are used, that such physical characteristics would be necessarily present in the combination of the reference disclosures. The Examiner's presumption ignores the differences in spin agents used in Blades et al. (methylene chloride) and Harriss et al. (mixed pentanes).

In point of fact, the Board's attention is directed to Comparative Example B of the present application (pp. 24-25), which was spun under very similar conditions to that of Comparative Example 1 of Harriss et al., but at a spinning temperature of 190°C (within the scope of Blades et al.'s Example V, but outside the presently claimed range), as proposed by the Examiner. The data in Table 2 (page 25) indicate that the point bonded sheet properties of Comparative Example B (which would be expected to be representative of Comparative Example 1 of Harriss et al.) are not within the scope of claim 29, which requires a Frazier Permeability of at least 2 cfm/ft^2. Comparative Example B exhibits air permeability too low to be measured by Frazier, and low enough to be measurable by Gurley Hill Porosity (8 seconds).

Accordingly, it is more reasonable to presume that increasing the spinning temperature of Harriss et al.'s Comparative Example 1 from 185°C to 190°C would not result in a sheet meeting the high air flow Frazier Permeability limitations of the present claims.

The Board's attention is further directed to Table 3 of the present application (pages 27-28), wherein crush value and surface area data are presented as to a series of comparative examples (B-E), spun under increasing spinning temperatures (from 185-200° C), most within the scope of Blades et al. None of the comparative examples meet those limitations of claims 28-30, which require a surface area of less than 10 m^2/g and a crush value of at least 1 mm/g. In contrast, the Examples (Table 3) of the present invention, spun according to the present claims, exhibit crush values and surface areas within the scope of those limitations in all of the independent claims hereof, claims 28-30.

Accordingly, Appellants respectfully submit that the Examiner's position that such physical data would have been present in sheets made by Harriss et al., according to Blades et al., is unfounded and therefore unreasonable. Withdrawal of the rejection for failure to meet the requirements of a rejection under 35 U.S.C. §103(a) as set forth in Vaeck.

I.C. Claims 30 and 12 stand rejected under 35 U.S.C. §103(a) as obvious in view of Harriss et al. in view of Blades et al.

Claim 30 is directed to a nonwoven sheet having the aforementioned surface area and crush value properties, and additionally having a hydrostatic head of at least 110 cm and a Gurley Hill Porosity of less than 6 seconds. Claim 12 specifies that the hydrostatic head be above 130 cm.

Appellants reiterate their comments *supra* in respect to the deficiencies of the base reference Harriss et al., and to its combination with Blades et al., as suggested by the Examiner. That is, the references are improperly combined, both technically and legally, and fail to present a *prima facie* case of obviousness as to claims 30 and 12. Withdrawal of the rejection is requested on this basis alone.

Similarly to the discussion above in item I.B., the cited prior art references are silent regarding hydrostatic head and Gurley Hill Porosity, and Appellants submit that the Examiner's off-hand dismissal of the significance of the hydrostatic head and Gurley Hill porosity values of claims 30 and 12, as being "reasonably presumed" to be met by the combination of the references, per In re Fitzgerald, is in fact unfounded and unreasonable.

Again directing attention to Comparative Example B of the present application, which is essentially equivalent to Comparative Example 1 of Harriss et al., but spun at a higher temperature according to Blades et al., the Board will note that the Gurley Hill porosity of the bonded sheet is only 8 seconds (not less than 6 seconds, as required) and the hydrostatic head only 107 cm (not at least 110 cm, as required).

Clearly, the claim limitations directed to hydrostatic head and Gurley Hill Porosity (which are absent from the prior art) would not have necessarily been present in the Harriss et al. bonded sheets, even if modified according to Blades et al. Withdrawal of the rejection for failure to meet the requirements of a rejection under 35 U.S.C. §103(a) as set forth in Vaeck.

II. Claims 21-23 stand rejected under 35 U.S.C. §103(a) as obvious in view of Harriss et al. in view of Blades et al. and further in view of Bisbis et al.

Claims 21-23 (all ultimately dependent on claim 29) are directed to nonwoven sheets which have been bonded with various bonding patterns. Claim 21 specifies that one side of the sheet is whole surface bonded, whereas the other side of the sheet is point bonded.

Bisbis et al. discloses a method for ultrasonically joining flash spun bonded polyolefin sheets at a seam (Abstract). As discussed by the Examiner (Office Action of May 2, 2005, page 5), Bisbis et al. disclose the use of Tyvek® Style 1422A sheets which are whole surface (linen) bonded on one side and point (rib) bonded on the other (col. 5, lines 24-35).

Appellants reiterate their comments *supra* in respect to the deficiencies of the base reference Harriss et al., and to its combination with Blades et al., as suggested by the Examiner. That is, the references are improperly combined, both technically and legally, and fail to present a *prima facie* case of obviousness as to claim 29, and claims dependent thereon. Bisbis et al. provides no indication of the flash spinning technique used to prepare the Tyvek® sheet and therefore cannot cure the deficiencies of the underlying rejection over Harriss et al. in view of Blades et al. Withdrawal of the rejection is requested on this basis.

The Board of Appeals is respectfully requested to remand this application to the Examiner with a direction to allow the claims.

Respectfully submitted,

Thomas W. Steinberg

THOMAS W. STEINBERG
ATTORNEY FOR APPLICANTS
Registration No.: 37,013
Telephone: (302) 892-0887
Facsimile: (302) 892-7343

Dated: 4/19/06

TWS:fgl
Enclosure

8. CLAIMS APPENDIX

1. (Canceled).

2. The plexifilamentary fiber strand of claim 28 wherein the surface area of the strand is less than 8 m^2/g.

3. The plexifilamentary fiber strand of claim 28 wherein the surface area of the strand is less than 5 m^2/g.

4. The plexifilamentary fiber strand of claim 28 wherein the crush value of the strand is at least 1.5 mm/g.

5. (Canceled).

6. (Canceled).

7. The nonwoven sheet of claim 29 having a hydrostatic head of at least 30 cm.

8. The nonwoven sheet of claim 29 having a hydrostatic head of at least 45 cm.

9. The nonwoven sheet of claim 29 having a hydrostatic head of at least 75 cm.

10. The nonwoven sheet of claim 29 having a hydrostatic head of at least 85 cm.

11. The nonwoven sheet of claim 29 having a hydrostatic head of at least 100 cm.

12. The nonwoven sheet of claim 29 or 30 having a hydrostatic head of at least 130 cm.

13. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 4 cfm/ft^2.

14. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 8 cfm/ft^2.

15. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 10 cfm/ft^2.

16. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 15 cfm/ft^2.

17. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 20 cfm/ft^2.

18. The nonwoven sheet of claim 7 having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 25 cfm/ft^2.

19. (Cancelled).

20. (Cancelled).

21. The nonwoven sheet of claim 29 wherein said sheet has a whole surface bonded portion of a first side of the sheet and a point bonded portion on the second side of the sheet, said point bonded portion of the sheet comprising at least 50% by weight of the nonwoven sheet.

22. The nonwoven sheet of claim 21 wherein the point bonded portion of the sheet comprises at least 60% by weight of the nonwoven sheet.

23. The nonwoven sheet of claim 22 wherein the point bonded portion to the sheet is bonded with a ribbed bonding pattern and the whole surface bonded portion of the sheet is bonded with a linen pattern.

24. A garment comprised of the nonwoven sheet of claim 7.

25. Filter media comprised of the nonwoven sheet of claim 29.

26. A vacuum bag comprised of the nonwoven sheet of claim 29.

27. A pillow cover comprised of the nonwoven sheet of claim 29.

28. A polyethylene plexifilamentary fiber strand produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C to form said plexifilamentary fiber strand having a surface area of less than 10 m^2/g and a crush value of at least 1 mm/g.

29. A nonwoven unitary fibrous sheet produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C to form substantially continuous polyethylene plexifilamentary fiber strands having surface areas of less than 10 m^2/g and crush values of at least 1 mm/g, collecting said plexifilamentary fiber strands to form a sheet and bonding said sheet to form said nonwoven unitary fibrous sheet comprised of substantially continuous polyethylene plexifilamentary fiber strands and having a Frazier Permeability, normalized to 1.0 oz/yd^2 basis weight, of at least 2 cfm/ft^2.

30. A nonwoven sheet produced by a process comprising flash spinning a solution of 12% to 24% by weight polyethylene in spin agent consisting of a mixture of normal pentane and cyclopentane at a spinning temperature from about 205°C to 220°C to form substantially continuous polyethylene plexifilamentary fiber strands having surface areas of less than 10 m^2/g and crush values of at least 1 mm/g, collecting said plexifilamentary fiber strands to form a sheet and bonding said sheet to form said nonwoven sheet comprised of substantially continuous polyethylene plexifilamentary fiber strands and having a hydrostatic head of at least 110 cm and a Gurley Hill Porosity of less than 6 seconds.

9. EVIDENCE APPENDIX

1) U.S. Patent No. 5,147,586 to Shin et al. (of record).

10. RELATED PROCEEDINGS APPENDIX

None.